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B65H 18/26

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GB 2080257 A GB 1514855 A GB 1453908 A

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UK CL (Edition J) B8R RRA1 RRB1 RRR6 RRW6
INT CL⁴ B65H

(54) Web dividing and rewinding machines

(57) A web dividing and rewinding machine 10 includes front and rear winding sections 12 & 14 which are similar in construction and operation, and slitter devices 18 arranged between said sections. Each section includes a contact roller 26 and a roll core support means 30 for a rewind roll R, the core support means is mounted on member 42, via base 40, to slide transversely of the web W, to accommodate differing web widths, the member 42 being fixed to base 56 sliding on rails 52 in direction A displacing rewinding core 28 from contact roller 26 as rewind roll R increases in diameter. Contact roll 26 is pressed against rewind roll R under pressure from fluid cylinder 58 (Fig 3, not shown) and the pressure so applied, and the travel of support means 30 away from contact roll 26 are controlled by control unit 62 (Fig 3) to maintain constant contact pressure between the rewind roll and the contact roller.

Fig.1

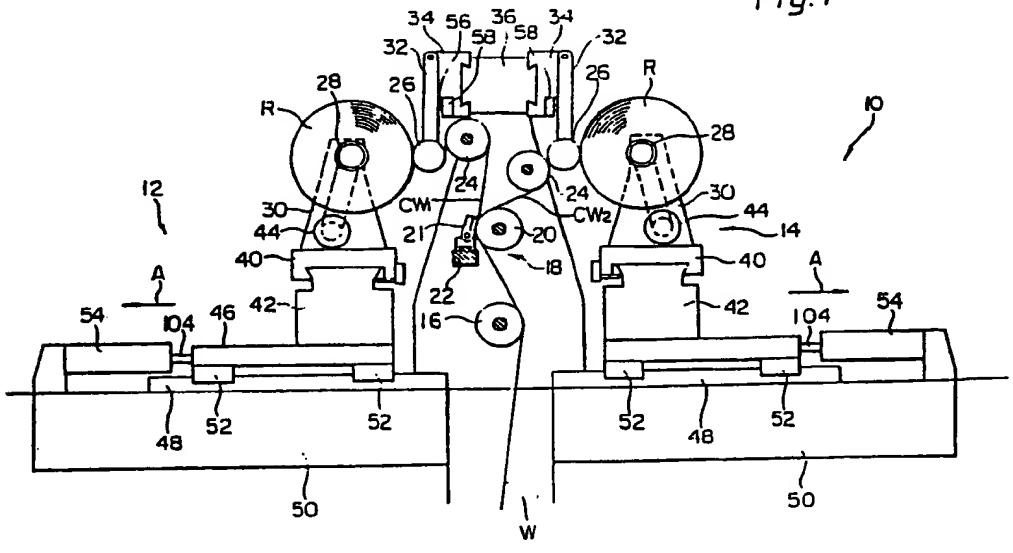

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Fig.1

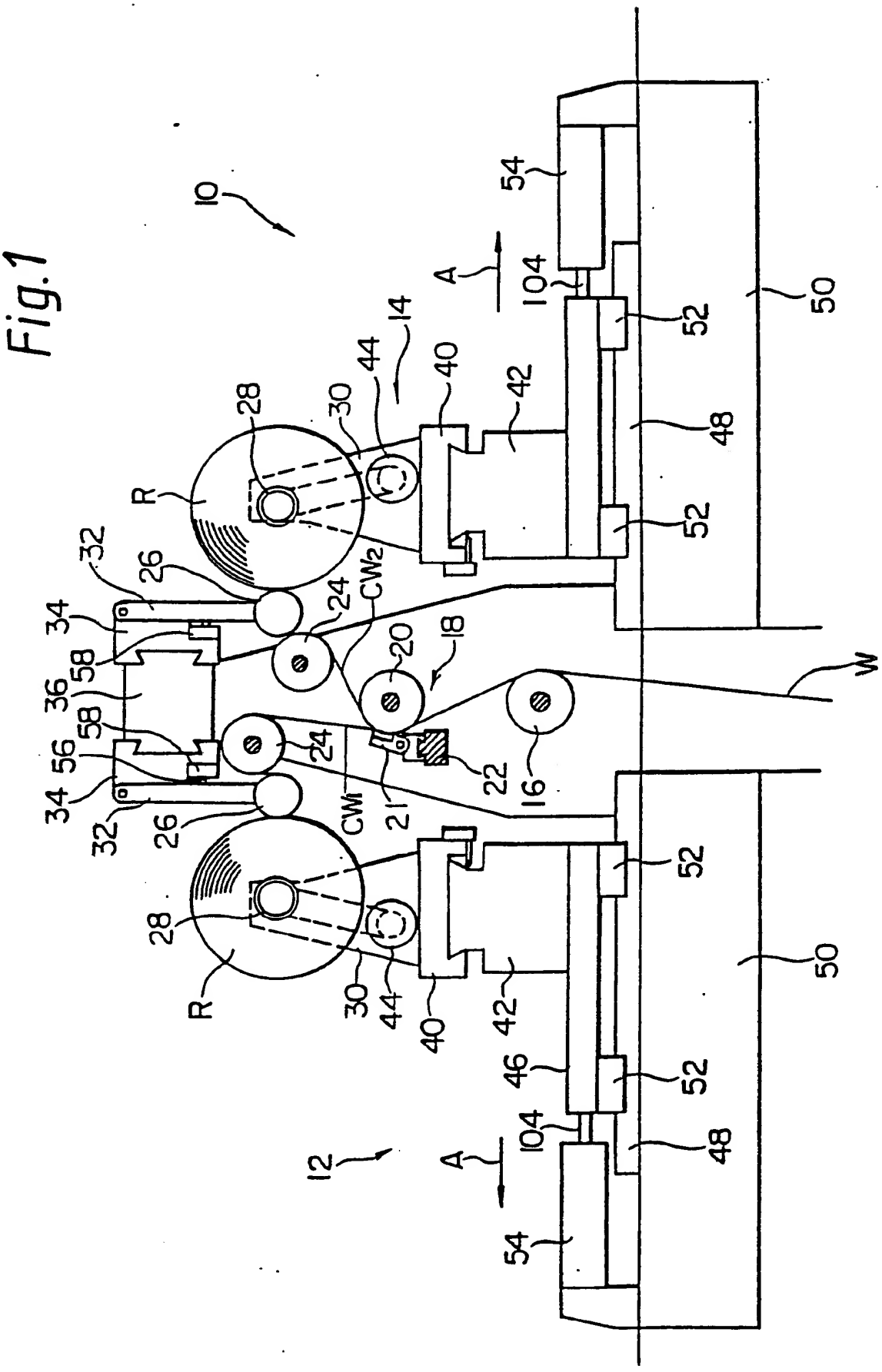

Fig. 2

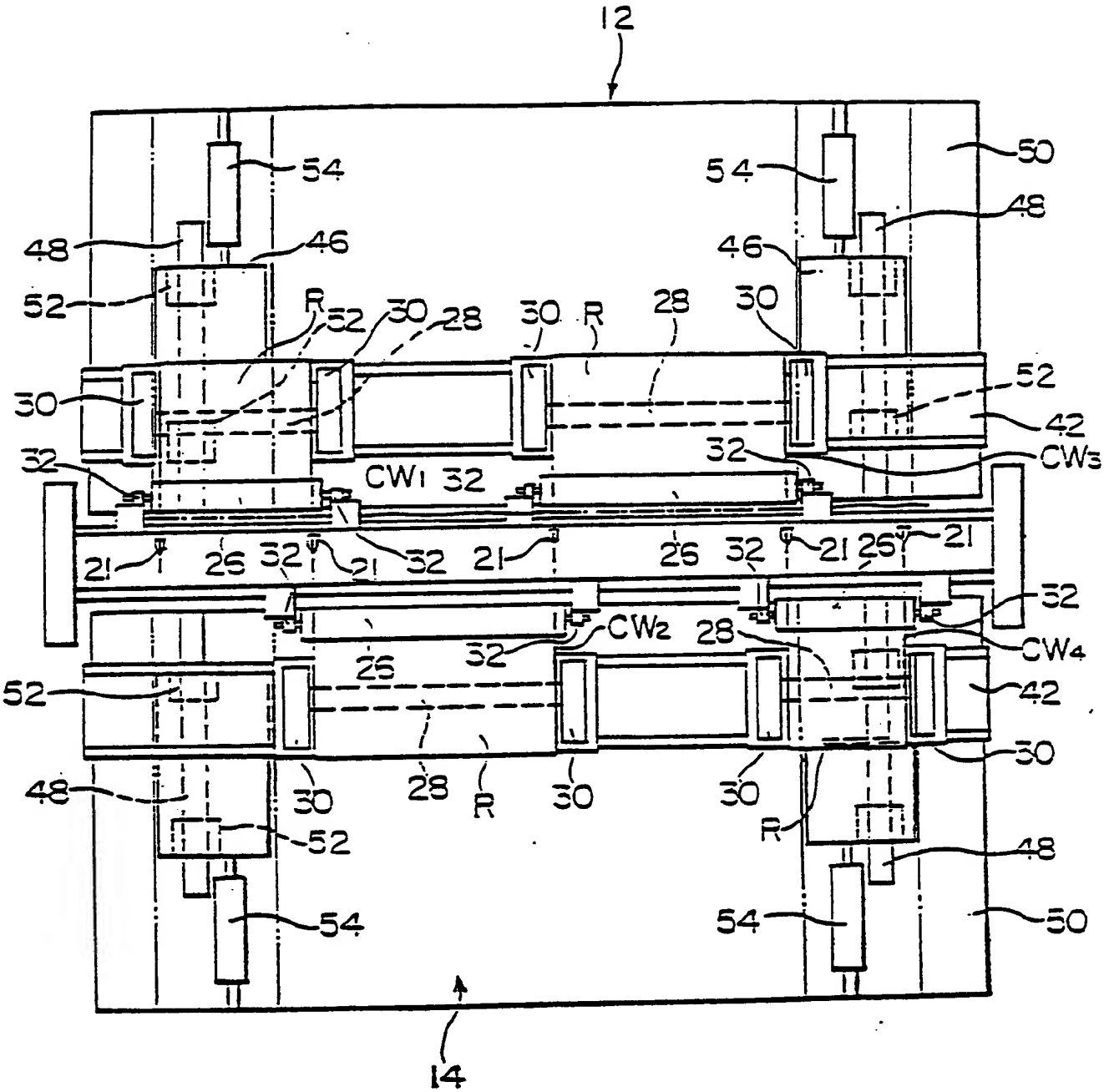
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Fig.3

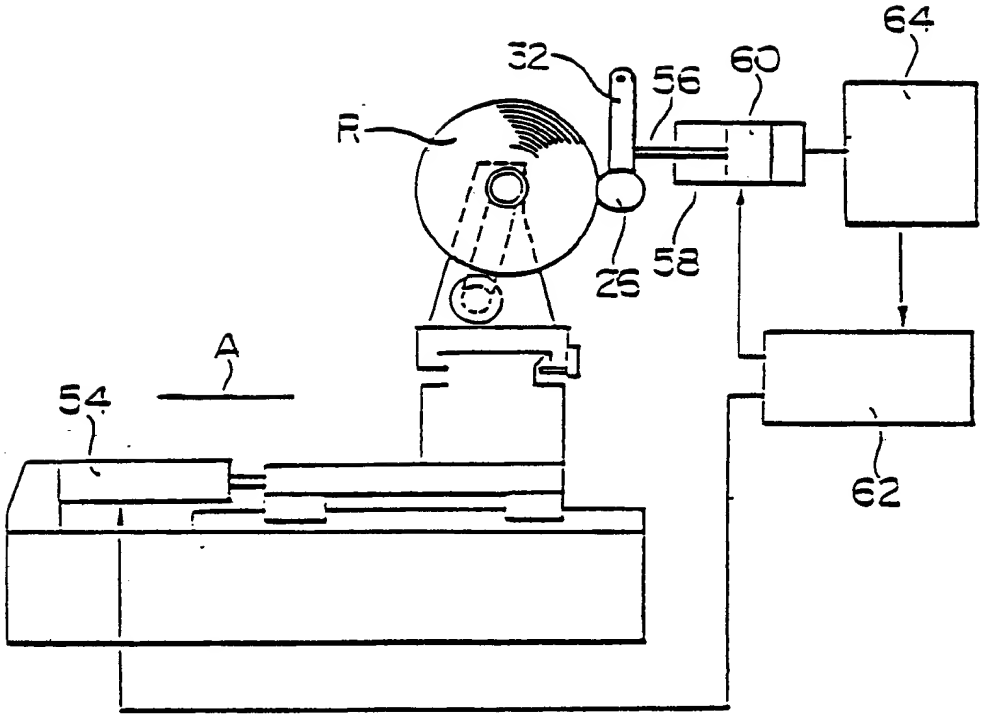

Fig. 4

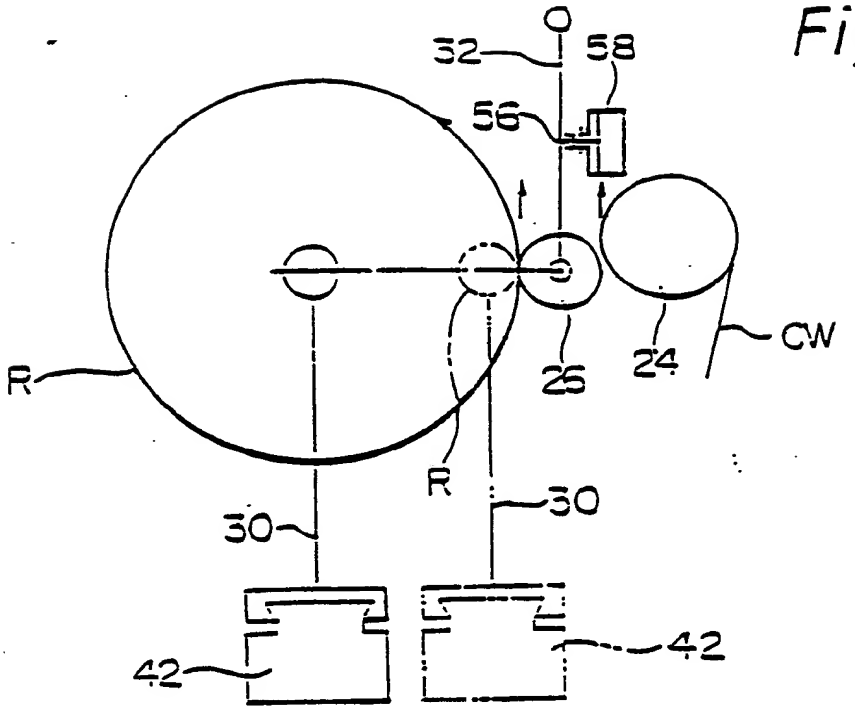

Fig. 5

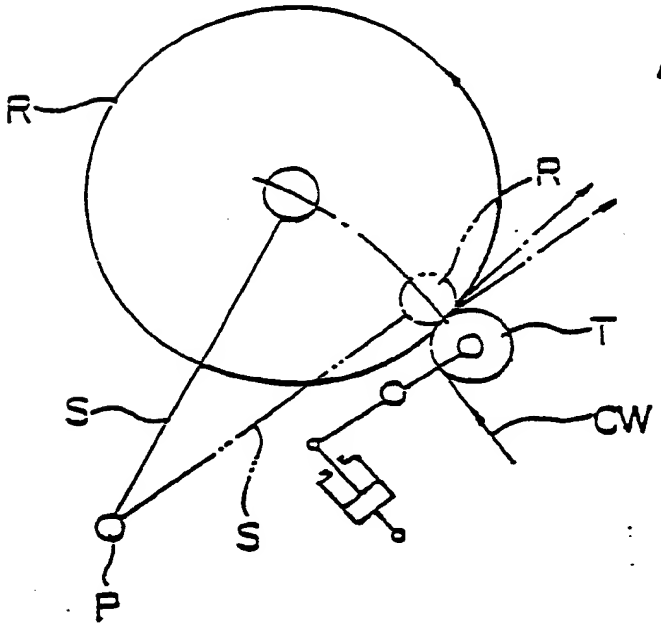

Fig. 6

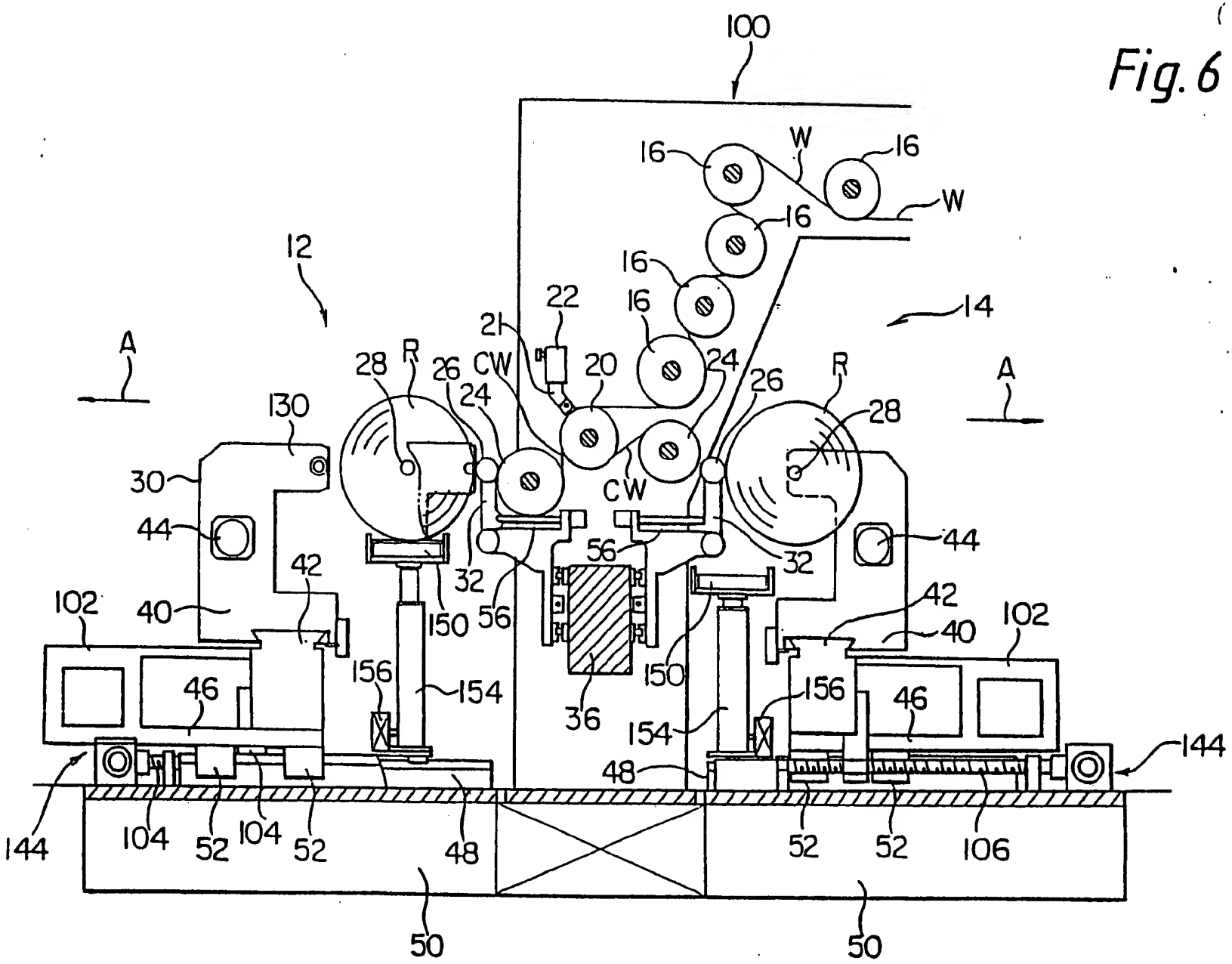
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Fig. 7

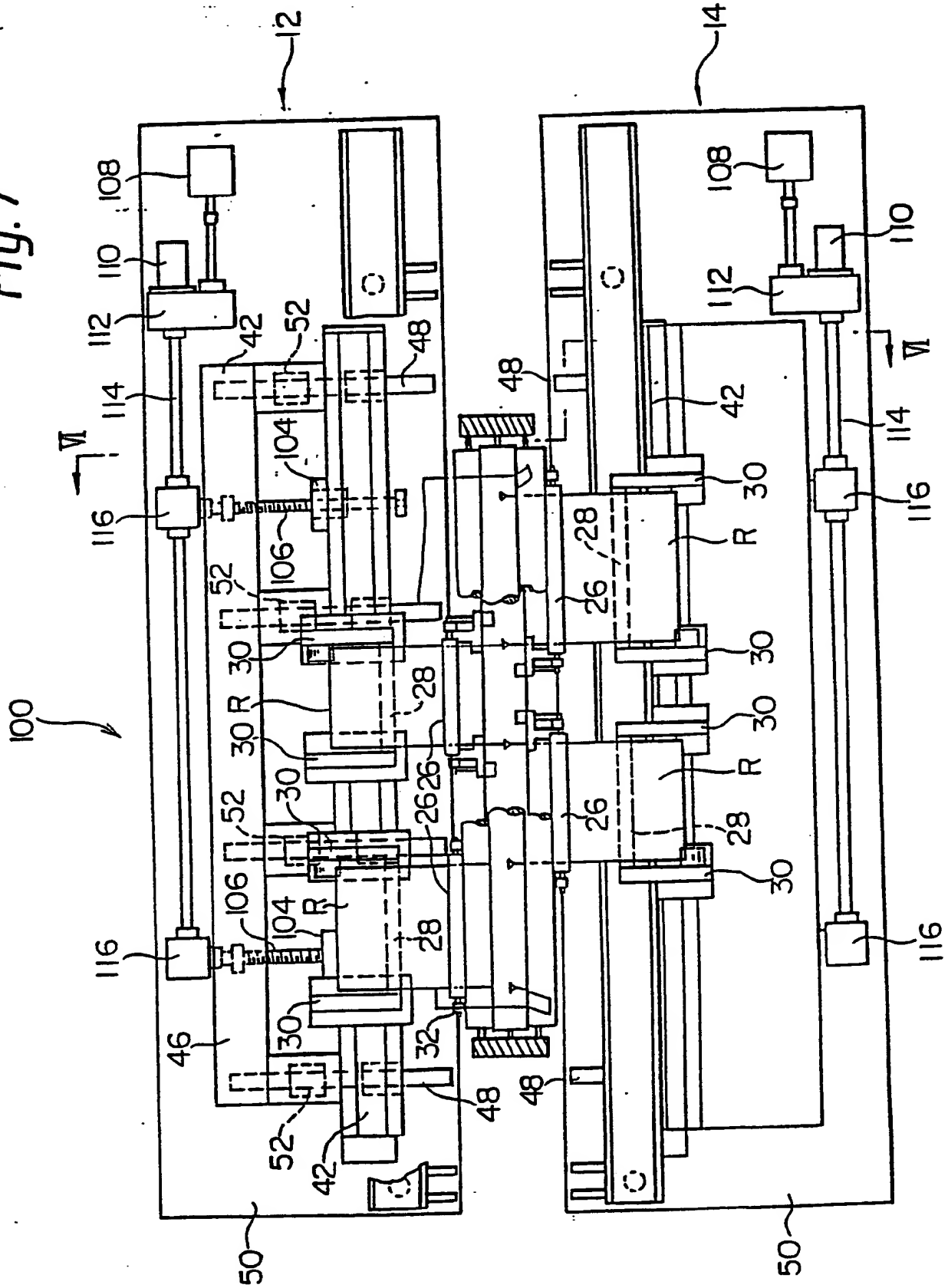


Fig.8

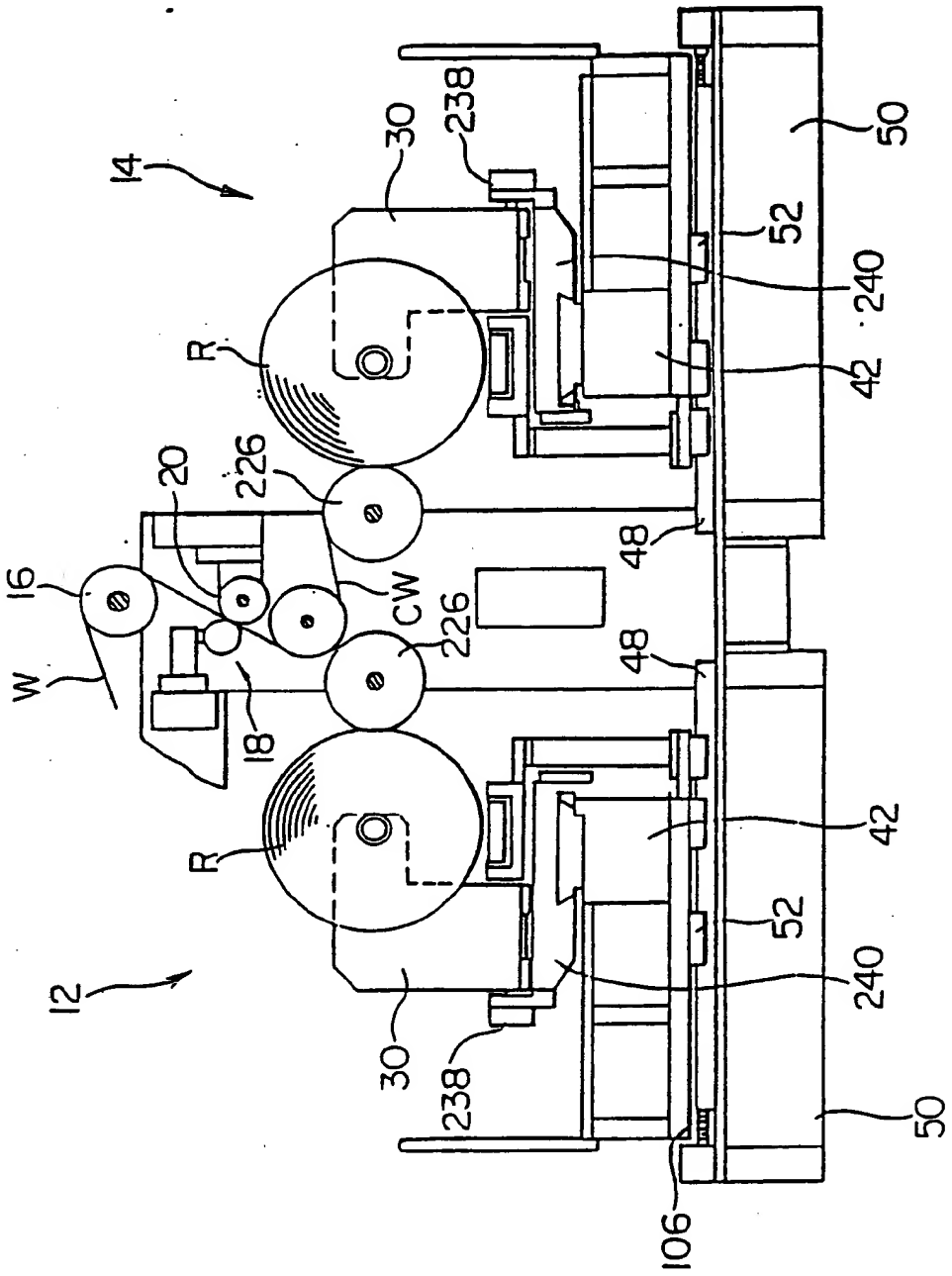
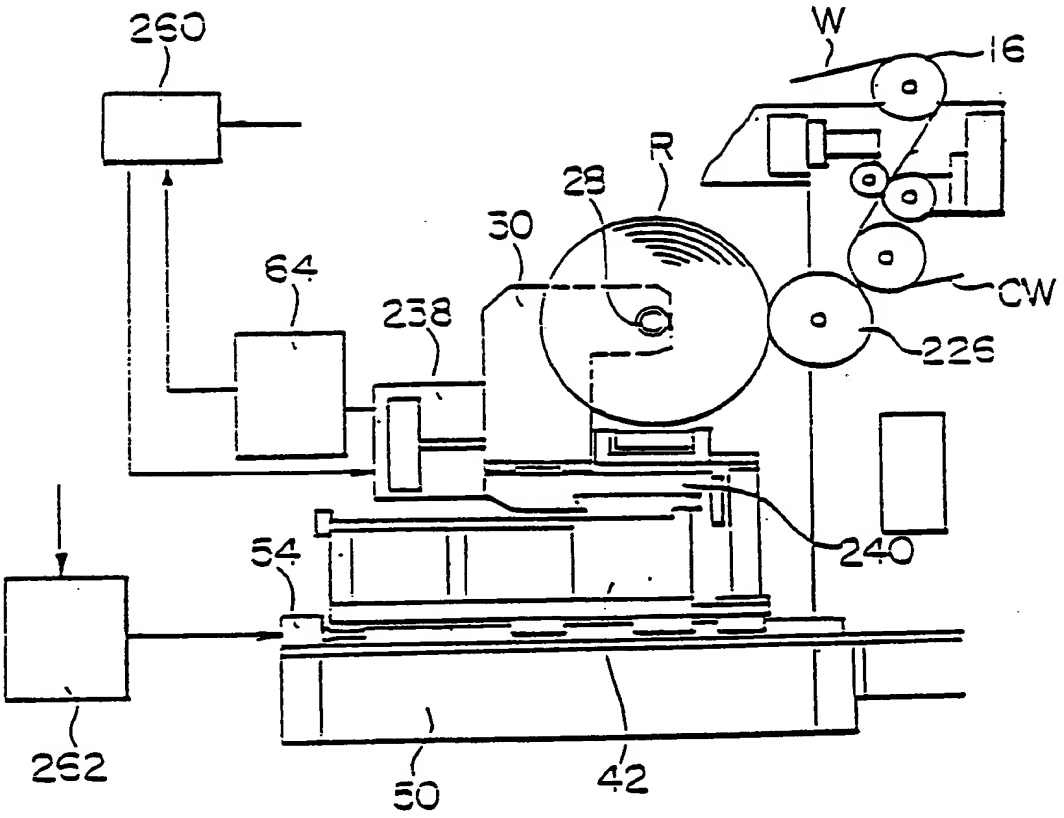


Fig. 9



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WEB DIVIDING AND REWINDING MACHINES

This invention relates to web dividing and rewinding machines, and more particularly to rewind machines which are adapted for dividing a relatively wide thin web material, such as plastic or paper, into a plurality of longitudinally extending strips or sub-webs of the desired widths, and rewinding each sub-web into a separate rewind roll and carrying the rewind rolls out of the machine.

The machine of the present invention can not only be combined with an unwinding unit of a supply or mill roll as a slitter-rewinder, but also combined with a machine for processing the web material with desired web processing apparatus, such as laminating or coating apparatus.

It is important to produce a high quality rewind roll. There is the possibility that the web of the supply roll will be stretched, wrinkled or cracked in rewinding operation so that a marketable supply roll may be converted into an unmarketable rewind roll. It is, therefore, necessary to produce a marketable rewind roll. The quality of the rewind roll depends on the contact pressure between the contact or touch roller and the rewind roll and the tension to be applied to the web during build-up by driving the contact roller, the rewind roll core or

both of them.

According to the present invention the contact pressure between the contact roller and the rewind roll can be controlled accurately. In order to stabilize the contact pressure between the contact roller and the rewind roll, it is essential to avoid the worst effects of mechanical vibration of the rewinding machine.

When the contact pressure is sufficiently controlled, air cannot enter into between the surfaces of the web to be wound. Consequently, it is possible to produce a high quality rewind roll which is wound tightly.

In order to produce the rewind roll wound tigthtly, the ratio of the weight of the rewind roll to its volume must be controlled to a desired value with respect to the diameter of the rewind roll or the length of the web. According to our experimental data, 8 to 14 microns thick film of polyester having the specific gravity of about 1.4 is desirable to be wound up to the roll having the winding density of about 1.35 to 1.36.

The slippage of the web build-up on the core depends upon the condition of the surface of a web of sheet material. If the coefficient of friction of the web is small, such as for example a silicon coated film, slip occurs between the contacting surfaces. On the other hand, even though the coefficient of friction of the web is large, such as a base film of magnetic tape, slip occurs easily between the contacting surfaces of the web when air is entered into between them.

If a main portion of the rewinding machine vibrates in operation, the contact roller and the rewind roll will be

affected adversary. In accordance with the vibration of the machine, the contact roller will touch to and apart from the rewind roll repeatedly whereby air will enter into between the surfaces or layers of the web to be wound. Thus slip occurs between the contacting surfaces of the web. When the web is slid in a transverse direction thereof, both sides of the rewind roll will be deformed. On the other hand, when the web is slid in a longitudinal direction thereof, the rewind roll will be loosened. The slip between the contacting surfaces of the web will be subjected to the formation of cracks and wrinkles, and the rewind roll thus produced will be of unmarketable.

Recently, the machine for rewinding a high slip web material at a high speed is requested. And also in order to rewind a broad web, an oversized machine must be designed.

On the other hand, the user demands to obtain a large diameter of the rewind roll. The rewind machine which is designed and manufactured to satisfy these requirements must be modified to avoid the worst effects of mechanical vibrations in operation.

The production capacity of the rewind rolls depends on the operation of the rewind machine and to improve the production capacity, it is necessary to carry the rewind rolls produced out of the machine as quickly as possible.

Japanese Patent Publication No. 45-20644 (corresponding to U.S. Patent No. 3,291,412) discloses one of typical rewinding machines. The rewind machine shown in this publication has a plurality of pairs of rewind arms pivotally mounted at their

inner ends, a plurality of rewind rolls carried by the arms at their outer ends for receiving a strip of sheet material to be wound, guide rollers for each of the rewind rolls, means for mounting the guide roller for pivotally moving the guide roller in a direction to engage the periphery of each of the rewind rolls, means for controlling the contact pressure between the guide roller and the rewind roll. The rewind machine of this publication is characterized by providing with means for mounting the guide roller so as to maintain the peripheral engagement with the roll of the strip material, the control means being provided with mean for controlling devices mounted on each of the mounting means for controlling the contact pressure between the guide roller and the rewind roll.

The above rewinding machine may have the following disadvantages:

In the first place, the rewind arm supporting or pivot shaft is pivotally mounted on a main frame as by means of pair of bearings disposed at opposite ends of the shaft and the main portion of the rewinding machine is not fixed adequately to the base or frame so that the machine will vibrate easily in operation. If the machine is of a large scale, the distance between the supporting ends of the shaft is increased and the rewind arms for holding a heavy roll must be mounted on the long shaft in a limited space. Consequently, it is difficult to improve rigidity of the machine and to prevent mechanical vibration in operation.

In the second, each of the rewind arms will change in

position depending upon the change of the width of the web to be divided and the change of the weight of the roll and also the weight of the rewind roll will change with the change of the diameter of the rewind roll and the weight of the web. In addition to the above, the portion of the rewind arm bearing the load of the rewind roll is not firmly supported, and the rewinding machine vibrates easily in operation.

The rewind arm moves in an arc, and the center of gravity of the pivot of the arm varies in position so that the rewind machine will cause vibration.

Not only the bearings of the shaft but also a number of rollers for guiding the strip are mounted on the frame, and the vibration of the frame resulting from the high speed rotation of the guide rollers may be transmitted to the support arms, rewind arms, and rolls and may be increased in transmission.

In order to transmit the driving force from a fluid cylinder to the rewind arm, the length of a york from its pivot to an outermost end thereof is shorter than the length of the rewind arm, and therefore the outermost end of the rewind arm may be displaced greatly, even though the end of the york is displaced slightly. Accordingly, if a connecting portion of the fluid cylinder with a bracket, a connecting portion of the york with the fluid cylinder, or the pivot of the rewind arm is worn out, the rewind arm will vibrate in operation.

In the rewind machine according to the above publication, it is impossible to control the contact pressure between the rewind roll and the contact roller precisely.

Namely, in this publication it is pointed out that even

though the force to be applied to the contact roller against the rewind roll is held in constant, the contact pressure between the two will be changed in rewinding operation.

In the conventional rewinding machine, during the rewinding operation, the contact pressure between the rewind roll and the contact roll changes because the direction of the supply of the strip to the contact roller is not kept in parallel to the direction of the supply of the strip to the rewind roll.

Further, the line connecting the center of the contact roller with the center of the pivot of the arm is inclined from a vertical position and an inclination angle of the front contact roller differs from one of the rear contact roller. Consequently, when the width of the strip to be divided is changed, the contact pressure will be changed.

In view of the above it is impossible to control the contact pressure exactly.

Japanese Patent Publication No. 55-293 published on January 7, 1980 discloses a web rewinding machine in which a roll supported on the supporting arms is pivotally moved in response to the build-up of the rewind roll, the movement of the rewind roll is detected and the supporting arms are kept in a vertical position.

According to the above second publication, a plurality of rewind rolls each of which is supported by an independent supporting arm are contacted with a common contact roller by means of pressure applying means arranged in the supporting arm, the roll and/or the contact roller are driven to rewind the strip

divided by a slitter on the rewind roll core, each of the supporting arms is pivoted to a common support means so as to swing it against the common contact roller within a certain range of small angles from its vertical position. The displacement of each of the supporting arms according to the increments in response to the build-up of the rewind roll is detected, and the common support means is backed in a horizontal direction by automatic control means. In this machine, however, there is a defect for producing the vibration in operation.

In the rewinding machine shown in the second publication, because the supporting arm is pivoted at its lower end and the rewind roll is rotated at the upper end of the supporting arm, it will be vibrated easily in operation, and impossible to suppress the vibration.

The above second publication states that in order to prevent the supporting arm from the vibration, it is possible to prepare means for damping the vibration such as an oil damper may be provided therewith. However, to hold the contact pressure between the rewind roll and roller in a relatively small value with a high accuracy, it is necessary to reduce the resistance of the supporting arm against the oil damper. When the resistance against the movement of the rewind arm is reduced, the effect for suppressing the vibration of the supporting arm will be lost.

According to the machine described in the second publication, both ends of a beam for mounting the core supporting means is supported at an elevated position, and the core supporting means are angularly moved to remove the rewind roll from the machine.

In addition, it is very hard to control the contact pressure between the contact roller and the rewind roll precisely. That is, in this machine, the supporting arm is inclined from its vertical position at a small angle and a pair of springs are arranged between the supporting arm and a supporter for compensating the change of the contact pressure between the rewind roll and the contact roller when the supporting arm is inclined from its vertical position. In the inclined position the supporting arm will receive the weight of the rewind roll and the supporting arm to increase the angle of inclination.

In this machine the contact pressure between the rewind roll and the contact roller will vary with the force to be applied to the contact roller from the rewind roll during build-up.

On the other hand, the force to be applied to the spring is kept in constant even if the supporting arm is inclined. Consequently, it is impossible to control the contacting pressure between the rewind roll and the contact roller by means of the spring accurately.

In case where a heavy rewind roll of 10 or 20 kg for example is produced, the rewind roll will change in weight in response to the build-up of the rewind roll, and the contact pressure will be changed accordingly.

Thus it is difficult to suppress the vibration of the supporting means and to control the contact pressure between the rewind roll and the contact roller effectively.

In view of the foregoing, the objects of the present

invention are to provide:

1. a rewinding machine which can produce a high quality rewind roll of high slip paper or plastic sheet material at high speed;

2. a rewinding machine which can rewind a broad web material at high speed; and

3. a rewind machine which can produce a broad width rewind roll of a large diameter.

Furthermore, the object of the present invention is to provide the rewinding machine in which a core supporting means is operated with substantially no vibration and the contact pressure between a contact roller and a rewind roll can be hold in a desired pressure at all times in operation.

A still further object of the present invention is to provide a web subdividing and rewinding machine which can effectively carry out the rewind roll out of the machine.

Other objects and features of the present invention will be more apparent to those skilled in the art on consideration of the accompanying drawings.

In the drawings, in which like reference numerals indicate corresponding parts throughout the several views,

Figure 1 is a diagrammatic elevational view illustrating the first embodiment of a web dividing and rewinding machine of the present invention;

Figure 2 is a schematic plan view in partly in section, of the machine shown in Figure 1;

Figure 3 is a schematic block diagram illustrating a contact

pressure between a rewind roll and a contact roller and driving means of a distance adjusting means according to the present invention;

Figure 4 is a schematic diagram illustrating the relation between a contact roller and a rewind roll according to the present invention;

Figure 5 is a schematic diagram explaining the relation between a contact roller and a rewind roll according to the conventional rewinding machine;

Figure 6 is an elevational view of the second embodiment of the present invention, the view being taken in the direction of the arrows substantially along the line VI - VI of Figure 7 according to the present invention;

Figure 7 is a schematic plan partly broken away to show interior construction, of the machine shown in Figure 6;

Figure 8 is a schematic elevation of the third embodiment of the present invention; and

Figure 9 is a schematic block view illustrating a contact pressure between a contact roller and a rewind roll and driving means of the distance adjusting means according to the third embodiment of the present invention.

Referring now to Figure 1 which shows a first embodiment of the present invention, a web dividing and rewinding machine 10 includes a front section 12 and a rear section 14 which are of similar construction and operate in a similar manner. A relatively wide supply web W of sheet material is guided from a

supply roll (not shown) through a plurality of guide rollers 16 to a plurality of slitters or cutters 18 arranged between the front section 12 and the rear section 14.

The slitter 18 itself is well known in the art and each of slitters 18 includes a roller 20 with grooves and a cutter blade 21 which is slidably mounted on a guide beam 22 extending parallel to a longitudinal axis of the roller 20. The cutter blade 21 may be selectively used depending upon the thickness or nature of the web W.

In order to divide or cut the web W of sheet material into two or more same or different width sub-webs CW_1, CW_2, ... CW_n, the cutter blades 21 can be adjusted each other for a desired or different sub-web widths.

Adjacent sub webs CW_1, CW_2 ... CW_n are alternatively pass partially around the respective guide rollers 24 of the front section 12 and the rear section 14.

Each of the front section 12 and the rear section 14 includes a contact roller 26 and a core support means 30 holding a core 28 on which the sub-web CW is wound. The axial length of the contact roller 26 may be selected to correspond to the width of the sub-web CW, and the longitudinal axis of the contact roller 26 is mounted between a pair of contact roller support arms 32 so as to arrange the longitudinal axis of the contact roller 26 in parallel to the longitudinal axis of the core 28. Because one end of each of the contact roller support arm 32 is pivoted to a movable holder 34 and the longitudinal axis of the contact roller 26 which is mounted on the other end of a pair of

the contact roller support arms 32 is positioned in parallel to the longitudinal axis of the core 28, the contact roller 26 can be contacted with the rewind roll R under a controlled pressure by suitable means such as a hydraulic cylinder means 58.

To mount a desired axial length of the contact roller 36 between a pair of support arms 32, the holder 34 of the support arm 32 can be moved or slid along the longitudinal axis of a guide beam 36 both ends of which are fixed to the frame of the machine (not shown) and the holder 34 can be fixed to a desired position.

The core support means 30 is provided with a clamp or chuck means (not shown) for removably mounting the core 32 thereon. It is possible to select a desired clamp means from among many types thereof. The core support means 30 can be moved parallel to the longitudinal axis of the core 28 so that the core 28 having a length which is adapted to wound up the sub-web CW may be mounted between a pair of the core support means 30. A base 40 of the core support means 30 can be slid along a distance adjusting member 42 and fastened firmly to it at a desired position. In order to rotate the core 28 for winding up the sub-web CW thereon, the core support means 30 is provided with a suitable driving device 44 such as, for example, an electric motor, the output shaft of which is connected through suitable power transmission mechanisms to the core 28.

According to the present invention, in operation of the machine, as the rewind roll R increases in diameter, the core support means moves in response to increments of the rewind roll R in the direction of an arrow A in Figure 1 and the contact

roller 26 is contacted with the rewind roll R at a desired pressure without changing its position.

To this end, a base 46 to which the distance adjusting member 42 is fixed can be moved on a pair or plurality of rails 48 laid on a floor or foundation structure. The base 46 carrying heavy load is moved continuously in the direction of the arrow A in from Figure 1 the original winding position at which the core 28 contacts with the contact roller 26 as the rewind roll R increase in diameter in response to the build-up of the sub-web CW on the core 28. There are no pivoted members in the core support means 30, and no vibration will be caused by the rotation of the rewind roll.

A foundation structure 50 on which the rails are laid may be selected from a block of steel, a single thick plate or a structure formed by combination of a plurality of frame members in consideration of installation work of the machine and method for guiding the web W.

The base 46 is provided with a plurality of engaging means or shoes 52 which are constructed to slide or move the base along the rail 48 smoothly without causing any vibrations. For this purpose, it is possible to use conventional slide mechanisms, linear bearing means and the like. Of course, in order to support a heavy load by the engaging means, wheels may be used therefor. If desired, the shoe 52 may be fixed to the foundation structure 50 and the rail 48 may be fixed to the distance adjusting member 42.

As shown in Figure 2, a pair of rails 48 support the front

and rear section 12 and 14. According to our experiences a pair of rails can sufficiently support the rewinding machine for the web of 2 meters in width, three rails can support for the web of 4 meters in width, and four rails can support for the web of 6 meters in width without causing any vibrations.

There are provided with driving mechanisms 54 for moving the base 46 in the direction of the arrow A shown in Figure 1 between the foundation structure 50 and the base 46. A screw threaded shaft and an electric or hydraulic motor for rotating the shaft may be used for the driving mechanisms 54.

If it is necessary to insure the movement of the distance adjusting member 42, it is advisable to use conventional parallel motion mechanisms.

The web dividing and rewinding machine according to the present invention is constructed as follows:

(1) The core support means is rigidly secured so that it does not cause any vibrations in operation:

(2) The position of the core support means can be adjusted in accordance with the width of the sub-web and the weight of the rewind roll can be decided by the diameter thereof and the weight of the web. And the portions for bearing a variable load is supported for firmly, whereby the rewinding machine occurs no vibration. The machine can distribute the weight of the rewind rolls in accordance with the change of the width of the web.

(3) When the rewind roll is increased in diameter, the core support means are not rotated or pivoted, and therefore no vibration will be caused. The rewind roll can be mounted at lower level of the machine.

(4) The frame of the front section and the rear section and the structure mounting the web guide rollers can be constructed separately.

(5) In the conventional rewinding machine, there are provided with at least three pivoting portions for connecting a fluid cylinder with a bracket, an arm with the fluid cylinder and the core supporting means with the frame, but in the present invention, there is no pivoting portions. members.

Accordingly, the present invention can remove the disadvantages which are pointed out in connection with the above-mentioned Japanese Publication No, 45-20644. In addition to the above, the present invention can obviate the disadvantages which will be caused by the rewind roll building up at the upper end of the support arm which is rotated angulary about a pivot at the lower end thereof, as shown in the above-mentioned Japanese Patent Publication No. 55-293.

According to our experimental data with respect to the operation of the web dividing and rewinding machine of the present invention, it is possible to rewind the web of plastic material 12 microns thick at 600 r.p.m. without any vibrations in all directions.

It is very important to suppress the vibration of the core support means in order to rewind the web on the core effectively. In addition, it is necessary to control the contact pressure between the contact roller and the rewind roll precisely.

In the present invention, as stated above, it is taken into account the prevention of the vibration and control of the

contact pressure between the rewind roll R and the contact roller 26 in operation.

As shown in Figure 3, in order to press the contact roller 26 to the core 28 or the rewind roll R at a desired pressure, the contact roller support arm 32 is cooperated with a rod 56 which is actuated by means of a piston 60 of the fluid cylinder 58. The operation of the piston 60 is controlled in a short stroke by output signals from a control unit 62.

It is preferable to move the core support means 30 continuously in the direction of the arrow A in Figure 3 together with the distance adjusting member 42 by the driving means 54 which will be operated by output signals from the control unit 62. To this end, the movement of the distance adjusting member 42 may be actuated by control signals showing an increment of the diameter of the rewind roll to be build-up.

If it is desired to move the contact roller stepwise with detecting its small movement, it is preferably to move the contact roller as little as possible. The control can be carried out by a digital or analog computer system.

As stated in the foregoing, the contact roller 26 and the rewind roll R can be moved linearly in response to the build-up of the rewind roll. Consequently, in the present invention the control of the contact pressure between the contact roller and the rewind roll will not be affected by the build-up of the rewind roll, but in the prior art it is difficult to control the contact pressure since the rewind roll is pivoted to the supporting arm or is rotated individually.

According to the present invention, as shown in Figure 4,

the direction of the sub-web CW to be supplied to the contact roller 26 is always in parallel to the direction of the sub-web CW to be supplied to the rewind roll R and the center of the contact roller 26 is maintained in the same horizontal plane as the center of the rewind roll R. Consequently, the pressure to be applied to the contact roller will not be affected by the pressure change to be applied to the contact roller owing to the change of tension of the web. Further, since the arm for supporting the contact roller is held in its vertical position, the weight change of the contact roller can be ignored.

On the other hand, in the conventional rewinding machine according to the above Japanese Patent Publication No. 45-20664 for example, as shown in Figure 5, the direction of the sub-web CW to be supplied to a contact roller T is not in parallel to the direction of the sub-web CW to be supplied to the rewind roll R. Even if they are in parallel to each other in the beginning of the operation, it is impossible to hold the contact pressure at a constant during the operation since the rewind roll R is rotated about the pivot P of its support S.

According to the present invention, the operation of the contact roller 26 and the core support means 30 can be controlled separately.

It is possible to connect the fluid cylinder 58 to a load detector or load cell 64 to obtain the electric signal indicating an actual contact pressure between the contact roller 26 and the rewind roll and then the signal can be fed back to the control unit 62 to improve the stability of the operation.

In our test, the web dividing and rewinding machine of the present invention is rewound the web of plastic sheet material 12 microns thickness at 600 r.p.m. under the contact pressure of 30 kg/m between the contact roller and the rewind roll, and the contact pressure is changed in the range of about 1/100 kg or less than 10 g unit. In the conventional rewinding machine, however, the contact pressure is changed over 500 g to 1 kg. Accordingly, the present invention can provide a high performance rewinding machine.

As shown in Figure 6, in the second embodiment 100 of the web dividing and rewinding machine according to the present invention, the guide rollers 16 for the web W and slitters 18 are respectively arranged at the upper portion of the machine, the web W is supplied to the slitters 18 through the guide rollers 16 from the upper side of the machine. This type is preferable to keep free from dust. The base 46 and a frame 102 which serves as a working table are rigidly secured to the distance adjusting member 42 by means of welding, bolt and nut means and the like. These elements can increase the weight to be applied to the distance adjusting member 42, and improve prevention of vibration. increased in weight and constructed stronglyto free from the vibration.

As shown in Figure 7, the distance adjusting member 42 is moved in a longitudinal direction of the web W along four rows of rails 48 in order to distribute the load to be applied to the distance adjusting member 42 to each of these rails. The distance

adjusting member 42 can only be moved smoothly in a longitudinal direction of the web W under restriction of other movement. According to the present invention, it is possible to design the machine depending upon the width and weight of the web.

In the second embodiment of the present invention, driving mechanisms 144 for reciprocating the distance adjusting member 42 in a longitudinal direction of the web W are supported on one end of the rail 48 holding the base 46 and the distance adjusting member 42. The driving mechanisms 144 include a screw shaft 106 engaging with a shoe 104 fixed to the distance adjusting member 45, a servo motor 108 rotating the screw shaft 106 at a low speed, a motor 110 rotating the screw shaft 106 at a high speed for facilitating the movement of the distance adjusting member 42 in preparing for operating the machine or in carrying the rewind roll out of the machine, differential gears 112, transmission shafts 114 and bevel gears 116. A pair of the screw shafts 106 are driven simultaneously, the distance adjusting member 48 and the core 28 can be moved to or away from the contact roller 26.

In the web dividing and rewinding machine 100 of the second embodiment of the present invention, the rewind roll R can easily be taken out automatically from the machine in a short time.

According to the conventional rewind machine, the rewind roll is inclined together with the core support arms in order to rest the rewind roll on the working table or to raise the roll by hanging means.

On the other hand, in this embodiment, there is a space between the contact roller 26 and the front section or the rear section, and means 150 for removing or conveying the rewind roll

R in an axial direction thereof can be arranged in the space.

The conveying means 150 include a belt conveyor 152 operated by the driving apparatus (not shown) an elevator 154 and means for driving means 156. If desired, the elevator 154 can be moved by suitable means (not shown) in a transverse direction of the axis of the the rewind roll R. In rewinding operation of the front section 12 and the rear section 14 of the rewind machine 100, the conveying apparatus 152 are set back from their operating position. When the rewinding operation has been completed, the conveyor belt 152 is operated to carry the rewind rolls R out of the machine.

In the second embodiment of the present invention, it is preferable to extend the upper portion of the core support means 30 inwardly in order to install the conveying apparatus 152 at the central position of the machine. If desired, a cart or wagon may be used as the conveying means 150.

According to the present invention, it is possible to fix the contact roller and to press a rewind roll R against the contact roller, if desired.

In the first and second embodiments according to the present invention, the contact rollers 26 are respectively arranged to each of the rewind roll cores 28.

In the third embodiment, on the other hand, as shown in Figure 8, a single contact roller 226 is mounted to each of the front section 12 and the rear section 14 regardless of the number of the rewind rolls.

In order to press the contact roller 226 to a plurality of rewind rolls R at a controlled pressure, the core support means 30 can be slid along the base 240 without causing any vibrations with respect to the base 240.

In this embodiment, as shown in Figure 9, it is provided with a control means 260 for controlling the contact pressure between the rewind roll R and the contact roller 226 and means 262 for controlling the movement of the distance adjusting member 42.

That is, the control signal from the control means 260 is applied to a pressure control means 238 so as to press the core support means 30 to the contact roller 226 at a desired pressure. In response to the build-up of the rewind roll R, the distance adjusting means 42 is actuated by the control means 260 so as to move it to the position corresponding to the position of the core support means 30 on the base 240.

In the third embodiment of the present invention, it is possible to dispose the conveyor apparatus at between the front section and the rear section.

While the invention has been described in its preferred embodiments, it is to be understood by those skilled in the art that the foregoing and other changes in form and details can be made therein without departing from the spirit and scope of the invention.

Claims

1. A web dividing and rewinding machine comprising a plurality of guide rollers for guiding a wide supply web to a slitter for dividing said web to longitudinally extending narrow sub-webs, a front section and rear section arranged to opposite to each other for winding up said narrow webs as a rewind roll on the cores of each of them, and means for supplying said sub-webs to said front and rear section alternatively, characterized in that said machine including:

a core support means provided in each of said front section and rear section;

contact rollers mounted on said core support means so as to contact it to said rewind roll at a desired pressure,

distance adjusting members to be positioned in parallel to a longitudinal axis of said rewind roll according to the width of said sub-web;

means for moving said core support means together with said distance adjusting member only in a longitudinal direction of said sub-web; and

means for controlling said driving means in response to increments of the diameter of said rewind roll.

2. The web dividing and rewinding machine as claimed in claim 1 in which a plulrality of contact rollers are respectively arranged to a rewinding roll of each of said sub-webs, the contact pressure between each of said contact rollers and each of said rewind rollers being controlled.

3. The web dividing and rewinding machine claimed in claim 1 in which said contact roller is fixed in its position, and the contact pressure between said contact roller, said rewind roll being controlled by small movement of said core support means.

4. The web dividing and rewinding machine as claimed in claim 1 in which the upper portion of said core support means is protruded inwardly therefrom for mounting said rewind roll core thereon.

5. The web dividing and rewinding machine as claimed in claim 1 in which means for carrying the rewind rolls out of said machine are arranged in the space between said front section and said rear section.

6. A web dividing and rewinding machine substantially as described herein with reference to and as illustrated in any of the accompanying drawings.

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